U.S. Department of Labor

Office of Administrative Law Judges
Seven Parkway Center - Room 290
Pittsburgh, PA 15220

(412) 644-5754
(412) 644-5005 (FAX)

Issue date: 01Aug2001

CASE NO. 2001-MSA-1

OALJ NO. M-1999-101-C

In the Matter of

RAG EMERALD RESOURCES LP,
Petitioner

and.

MINE SAFETY & HEALTH ADMINISTRATION,
Party-in-Interest

v.

UNITED MINE WORKERS OF AMERICA,
Party Opposing Petition

Appearances:

R. HENRY MOORE, ESQ.,
For the Petitioner

ROBERT A. COHEN, ESQ.,
For the Administrator

MR. TIMOTHY J. BAKER,
For the United Mine Workers of America

Before: RICHARD A. MORGAN

DECISION AND ORDER APPROVING AND MODIFYING, IN PART, MSHA PROPOSED DECISION AND ORDER

On September 9, 2000, the Mine Safety and Health Administration ("MSHA"), acting pursuant to section 101(c) of the Mine Safety and Health Act ("Act"), 30 U.S.C. § 811(c)(1988), granted RAG Emerald Resources', L.P., (hereinafter "Emerald") petition for modification, under 30 C.F.R. Part 44, of a mine safety regulation, 30 C.F.R. § 75.1002, that regulates the use of high voltage cables in longwall mining. The United Mine Workers of America (hereinafter "UMWA") opposed the

modification and requested a hearing before an administrative law judge. The MSHA along with Emerald sought to uphold the modification as it believes it provides the same level of protection to the miners. (Hearing Transcript ("TR") 78-79).

I. PROCEDURAL HISTORY

I was assigned the matter on December 11, 2000. On February 12, 2001, the UMWA filed a Motion to Withdraw its contest of the 2000 PDO. An initial hearing was held, in Pittsburgh, Pennsylvania, on February 13, 2001, to resolve the Motion and evidentiary matters. On February 14, 2001, the UMWA filed a Motion to Rescind its Motion to Withdraw its contest which I granted on February 15, 2001.

On March 22, 2001, I issued a Ruling and Order finding the UMWA appeal of the 2000 PDO constituted a "partial" appeal, under 30 C.F.R. § 44.14(c), versus an overall or "global" appeal.[1] When a partial appeal is under consideration, the MSHA Administrator's PDO becomes final within 30 days after service and remains in effect until modified, set aside, or affirmed, under 30 C.F.R. § 44.14(c)(2). On April 10, 2001, I issued a Ruling and Order Denying Motion for Reconsideration and Granting Motion in Limine in Part. That ruling confirmed the appeal was a "partial" appeal and required the UMWA to show the relevancy of its proposed evidence, by means of preliminary offers of proof, to the two issues before me prior to presenting it.[2] I also found that I lacked authority, in this proceeding, to review MSHA's enforcement actions.

I held an additional hearing on April 17, 2001. At that time RAG Emerald exhibits ("CX") 2, 9-10, 13-14, 22, 24-25, 30-32, and 35 were admitted. Judicial notice was taken of MSHA exhibit ("GX" 1). The UMWA offered no exhibits. Post-hearing briefs were submitted by June 30, 2001.

II. ISSUES[3]

I. Whether, the conditions of the modification of 30 C.F.R. § 75.1002, dealing with "trolley wires and trolley feeder wires", set forth in the proposed decision & order ("PDO") of the MSHA**,** dated 9/5/00, will at all times guarantee no less than the same measure of protection afforded the miners at such mine by mandatory safety standard

---

[1] The UMWA believes the ruling was erroneous in that "[I]mplicit in this ruling is the absurd assumption that in order to maintain a global appeal, a party must object to each and every provision of a PDO, since objection to fewer than all of its conditions constitutes a partial appeal." (Mr. Baker's Reply Brief at 6, n. 2).

[2] Contrary to the UMWA's argument that this ruling shifted the burden of proof to the UMWA, this ruling brought some semblance of order to the UMWA's sometimes rambling and unfocused presentation. Rather than excluding evidence, other than speculative evidence concerning the possible width of longwall panels over that currently planned by Emerald and accidents at the Wilberg and Williams Station Mines absent a showing of relevancy, I required the UMWA to first explain how it was relevant. When it was able to do so, the evidence was generally admitted. If the UMWA chose not to make such an attempt to explain the relevance, that was its own tactical decision.

[3] There is no issue as to diminution of safety to the miners. A discussion of the items contested in the 2000 PDO is reflected at TR 281-289.

30 C.F.R. § 75.1002? (30 U.S.C. § 811(c) and 30 C.F.R. §§ 44.4(a)(1) & 44.14(c)(2)(i)).

II. Taking into account both the advantages and disadvantages of the alternative method set forth in the PDO, including effects unrelated to the goals of the original standard, if the approved modification will achieve a net gain or at least equivalence in overall mine safety?

III. STIPULATIONS[4]

The parties agreed to and I find the following facts.

1. Emerald and the Administrator agree that the issue before the Administrative Law Judge is whether the petition for modification, as modified by the PDO issued on September 5, 2000, and the agreements of the parties herein, will at all times guarantee no less than the same measure of protection afforded by 30 C.F.R. § 75.1002. The UMWA contends that the issue before the Administrative Law Judge is to insure that any new standard offer no less than the same measure of protection afforded by the standard currently in force at the Emerald Mine as determined by the Proposed Decision and Order issued September 20, 1995.

2. Emerald operates the Emerald No. 1 Mine, MSHA I.D. No. 36-05466, located near Waynesburg, PA. It is an underground bituminous coal mine which employs approximately 485 miners, both salaried and hourly. Approximately 400 of those employees work underground.

3. The hourly employees are represented by the UMWA Local Union No. 2258.

4. The mine operates three production shifts a day, six days a week.

5. At the Emerald Mine, Emerald utilizes the longwall method of mining. Such method produces the majority of the coal Emerald mines. Emerald produces approximately 23,000 tons of coal a day.

6. Emerald mines the Pittsburgh seam of coal and the seam height is approximately 6-7 feet.

7. The use of the longwall method of mining involves the development of a set of entries (i.e., passageways through the coal) around a large block of coal with mining equipment known as a continuous miner. Emerald presently has three continuous miner sections it operates on a regular basis and one it operates on a part-time basis. It operates one longwall section.

8. In order to longwall mine a set of three development entries is developed off a set of mains entries on each side of a block of coal. These entries are connected together at the furthest extent of

[4] TR 217-218- reflects a discussion of the stipulations. (JX 1).

the longwall panel by another series of entries which are used for longwall set up and for the bleeder system (i.e., the system that transports methane away form the active areas of the mine).

9. An entry is tunnel or passageway driven into the coal seam by a continuous miner and is approximately 6 feet high and 16 feet wide.

10. At Emerald, the block of coal to be longwall mined is approximately 1000 feet wide and 10,000-11,000 feet long. It may be up to 14,000 feet long under the approved roof control plan and the 1995 Proposed Decision and Order.

11. Once the entries around the block of coal are developed, longwall mining equipment is installed along what will become the longwall face, i.e., the area where the coal will be severed from the seam by longwall mining equipment. The face encompasses the width of the block of coal left by development mining. At Emerald, the face is approximately 1000 feet wide.

12. The longwall mining equipment that is installed on the longwall face includes a face conveyor, i.e., a chain conveyor which conveys the coal that is severed from the face to the stage loader which feeds it onto a conveyor belt system for transport from the mine.

13. The longwall mining equipment that is installed on the longwall face includes a shearer which severs the coal from the longwall face. It consists of two large rotating drums which have bits attached to them. The shearer removes approximately 42 inches of coal from the seal on each "pass" across the face. The shearer is operated by a miner carrying a radio remote control device.

14. The longwall mining equipment that is installed on the longwall face includes 173 shields which support the roof over the area where the miners work and travel along the longwall face. The shields are hydraulically operated. The shields advance as the coal is mined. The area behind the shields is known as the longwall "gob." In the gob, the roof material is permitted to fall because no miners are present in the gob. The falling of such material is integral to safe mining at the face.

15. The shearing process which removes coal from the seam also releases methane contained in the coal seam. It is an odorless, tasteless and colorless gas which is explosive when it is present in quantities of 5-15% of the atmosphere. Methane can reliably be detected by sensors and detectors presently in use in mines.

16. The set of three development entries which contain the conveyor belt and the track are known as the headgate entries. The development entry on the other side of the block of coal left for the longwall is known as the tailgate.

17. Normally nine miners work on the longwall face. They include two foremen, two shearer operators, a headgate operator, two miners who operate the shields, and two mechanics.

18. On retreat, the longwall face is ventilated by intake air, i.e., air that has not ventilated any other working section, or any worked out area. The intake air currently travels into the longwall in at

least two of the headgate entries at Emerald. All of these entries contain intake air but the direction of the air in the No. 1 or belt and the No. 3 entries may vary.

19. The longwall bleeder system is a set of entries around the longwall gob (i.e., the mined out area of the longwall panel) designed to transport methane gas away from the longwall face and out of the mine.

20. The No. 2 (or middle) entry of the longwall "headgate" contains track for mine vehicles but does not contain trolley wire. The vehicles that operate in such haulage are either battery or diesel powered.

21. The No. 1 entry of the longwall "headgate," the entry formed by one side of the block of coal to be longwall mined, contains the conveyor belt that transports coal away from the longwall face and out of the mine.

22. The longwall tailgate entry may contain "return air," i.e., air that has ventilated the longwall face. Such air carries dust and methane out of the mine.

23. Emerald utilizes a "high" voltage longwall mining system. It utilizes 4160 AC voltage. Such voltage powers the longwall shearer, the face conveyor and the longwall stage loader.

24. The great majority of the longwall mining systems in this country utilize "high" voltage as opposed to "low" or "medium" voltage.

25. "High" voltage is any voltage that exceeds 1000 volts. "Medium" voltage is between ~~660~~ 661 volts and 1000 volts. Low voltage is below 660 volts.

26. Because of the requirements of 30 C.F.R. § 75.1002, The Administrator takes the position that utilization of high voltage equipment requires the granting of a petition for modification under Section 101(c) of the Federal Mine Safety and Health Act of 1977 ("the Act"), 30 U.S.C. § 811(c). Since approximately 1985, the Administrator has granted petitions for modification of 30 C.F.R. § 75.1002 to permit use of high voltage longwall systems. Each petition must be evaluated under Section 101(c) of the Act on a mine by mine basis, taking into account the individual mining conditions at the mine, and may not contain identical conditions.

27. Emerald has previously petitioned successfully, on three occasions, to modify the application of 30 C.F.R. § 75.1002 to permit use of high voltage longwall equipment. The most recent petition prior to the instant one was docketed at No. M-95-37-C and was granted on September 20, 1995. A copy of the Proposed Decision and Order is attached hereto as Joint Exhibit A.

28. On September 30, 1999, Emerald submitted a petition to modify the application of 30 C.F.R. § 75.1002 in order to eliminate certain provisions of its previous petition, which had previously been agreed to through negotiations with the UMWA.

29. The Administrator investigated such petition and its investigative report is attached hereto as Joint Exhibit B.

30. On September 5, 2000, the Administrator issued a proposed decision and order ("PDO") granting Emerald's petition and finding that its proposed alternative method will at all times guarantee no less than the measure of protection afforded by the standard. A copy of the PDO is attached hereto as Joint Exhibit C.

31. On October 5, 2000, the UMWA requested a hearing concerning the proposed decision and order. The UMWA seeks to retain in the PDO certain conditions that were previously agreed upon by the UMWA and Emerald and contained in the 1995 PDO or to supplement the conditions in the previous PDO.

32. Item 37 of the 1995 PDO stated as follows:

> The maximum width of longwall panel shall not exceed 1,050 feet, and maximum length shall not exceed 14,000 feet.

The Union is opposed to the exclusion of Item 37, which was contained in the September 20, 1995 PDO (attached as Exhibit A) and not contained in the current PDO. Emerald does not believe that such condition is necessary to meet the test set out in Section 101(c) of the Act. The limits of length and width of the longwall panels are described in the approved roof control plan under 30 C.F.R. § 75.220. Such lengths and widths could be modified in the future with MSHA's approval.

33. Item 39 of the 1995 PDO stated as follows:

> All longwall panels covered in this petition shall be provided during longwall retreat mining with two separate intake entries on the headgate side. Both of these intake travelways shall be maintained to ensure passage at all times of any persons, including disabled persons. The primary escapeway entry shall be designated as the fire-hazard free entry and shall contain a lifeline maintained from a point 1200 feet out by the longwall face to a point within 200 feet of the bottom of the escape shaft. Equipment shall not be permitted in this fire-hazard free entry except under emergency circumstances and/or for maintenance of the entry. In addition, equipment necessary to transport miners and materials may be used in the primary escapeway in accordance with 30 C.F.R. 75.380.

The Union is opposed to the exclusion of Item 39 contained in the 1995 PDO from the current PDO. Emerald does not believe that such condition is necessary to meet the test set out in Section 101(c) of the Act. Emerald and the Administrator believe that escapeways are adequately addressed by 30 C.F.R. § 75.380.

34. The escapeways required by MSHA are described in 30 C.F.R. § 75.380.

35. At least one of the escapeways required by 30 C.F.R. § 75.380 must contain "intake" air, i.e., air that has not previously ventilated a working (i.e., production) face. A second escapeway is also required but it need not contain intake air. Such escapeway may be located in the tailgate or headgate depending on the circumstances present. If the tailgate entry is not used as a second escapeway, it must be maintained as a "travelway." Escapeways have minimum height and width requirements and travelways do not.

36. Item 41 of the 1995 PDO stated as follows:

> Sufficient rock dust shall be applied throughout the panel to be in compliance with 30 C.F.R. § 75.403, and to adequately control float coal dust. An 80 percent incombustible content shall be maintained in the return entry. A rock duster shall be positioned in order to regularly rock dust the return entry while the shearer is operating. Should the rock duster become inoperable, repairs shall be initiated immediately. Other alternate methods (manual application) may be used to control the float dust until the repairs are completed.

The Union is opposed to the exclusion of Item 41 contained in the 1995 PDO from the current PDO. Emerald does not believe that such condition is necessary to meet the test set out in Section 101(c) of the Act. Emerald and the Administrator believe that such subject is addressed by 30 C.F.R. § 75.402 and 75.403.

37. MSHA's rock dusting requirements are contained in 30 C.F.R. §§ 75.402 and 75.403.

38. Item 43 of the 1995 PDO stated as follows:

> One methane sensor shall be located at mid-face, and one methane sensor shall be located at the tailgate. A methane monitor shall be installed on the longwall shearer. All methane sensors and methane monitors shall be installed and properly maintained in accordance with 30 C.F.R. § 75.342. If the mid-face monitor becomes non operational, then it must be repaired prior to the start of the next shift.

The Union is opposed to the exclusion of Item 43 contained in the 1995 PDO from the current PDO. Emerald does not believe that such condition is necessary to meet the test set out in Section 101(c) of the Act. Emerald and the Administrator believe that such subject is addressed by 30 C.F.R. § 75.342.

39. The methane sensors required by MSHA are described in 30 C.F.R. § 75.342.

40. Checks for methane on the longwall face are required at 20 minute intervals by 30 C.F.R. § 75.362(d)(1)(iii).

41. The actions required by MSHA at certain levels of methane are described at 30 C.F.R. § 75.323.

42. Item 41 of the PDO states as follows:

> Within 60 days after this Proposed Decision and Order becomes final, the Petitioner shall submit proposed revisions for its approved 30 C.F.R. Part 48 training plan to the Coal Mine Safety and Health District Manager. These proposed revisions shall specify initial and refresher training regarding the terms and conditions stated in the Proposed Decision and Order.

The Union is seeking to strengthen the training language contained in Item 41 of the current PDO. Emerald does not believe that any additional condition is necessary to meet the test set out in Section 101(c) of the Act. The language in the current PDO was contained in the 1995 PDO at paragraph 46.

43. The purpose of 30 C.F.R. § 75.1002 is to protect miners from the hazards of nonpermissible electrical equipment coming in contact with methane from pillared areas.

44. Emerald has adopted a roof control plan in compliance with 30 C.F.R. § 75.220 and a ventilation plan in compliance with 30 C.F.R. § 75.370.

45. Emerald operates a coal mine, the products of which enter commerce and the operations of which affect interstate commerce.

46. The office of Administrative Law Judges U.S. Department of Labor has jurisdiction to hear this matter.

IV. FINDINGS OF FACT

Mine Operations

Emerald operates the Emerald No. 1 Mine, MSHA I.D. No. 36-05466, located near Waynesburg, Pennsylvania. Its products enter commerce and its operations affect interstate commerce. The Emerald Mine is an underground bituminous coal mine which employs about 485-518 miners, both salaried and hourly. Approximately 400 of those employees work underground. The hourly employees are represented by UMWA Local Union No. 2258.

Emerald mines the Pittsburgh #8 coal seam located 400 to 1,200 feet below the surface, which is about six to seven feet high, with three production shifts six days a week utilizing the "longwall" mining method producing about 23,000 tons of clean bituminous coal per day or 6,300,000 per year. (TR 83). Its standard eight hour work shift is 8:00 A.M. until 4:40 P.M.. Emerald has adopted a roof control plan, in compliance with 30 C.F.R. § 75.220, and a ventilation plan, in compliance with 30 C.F.R. § 75.370. The regulations require the approved roof control plan be "suitable to the prevailing

geological conditions and the mining system to be used at the mine."[5] 30 C.F.R. § 75.220(a)(1). The regulations require the approved ventilation plan be designed to "control methane and respirable dust and shall be suitable to the condition and mining system at the mine." 30 C.F.R. § 75.370(a)(1). The requirements for escapeways are set forth in detail in Subpart D, Ventilation, 30 C.F.R. Part 75. These federal standards require Emerald to maintain a primary and alternate escapeway, which must at a minimum be six feet wide and the height of the entry, off each active mining section. (TR 134).

Longwall mining involves development of a set of entries (passageways through the coal) around a large block of (underground) coal with mining equipment known as a continuous miner.[6] (TR 99-103; CX 30- 31). Emerald regularly operates three continuous miner sections and operates one part time. It operates one longwall section. The longwall mining machine or shearer itself has a system that is 1,000 feet long and is comprised of three major components: the shearer, which is the actual coal-cutting machine, with two cutting drums which moves back and forth across the width of the face and loads coal on a conveyor advancing about 43 inches per cut until the entire panel is removed; the face chain conveyor, which is 1,000 feet long and extends along the length of the coal block with a running track for the shearing machine and a conveyor belt which conveys the cut coal to the headgate for transportation out of the mine on another conveyor belt; and, a series of hydraulic roof supports or shields which support the mine roof and serve as an advancement mechanism for the face conveyor and the shearer. (TR 95). The shearer and chain conveyor move forward into the coal seam by pushing themselves forward from the shields, which may hold over 900 tons of rock. The shields then pull themselves forward and the now unsupported overhead rock behind it safely falls. That fallen rock area or gob helps support the roof and relieves stress from the roof immediately above the shields and over onto the longwall face. (CX 30). Normally, nine miners work on the longwall face under the shields.

A crew is comprised of twelve workers: two shearer operators, two shield operators, one headgate man, two timber men, three utility men and two section mechanics. (TR 145-6). Two supervisors, a production foreman and a maintenance foreman are with each crew. (TR 210). The mechanics must maintain the equipment in a "permissible" condition to guarantee it is explosion-proof. (TR 146-7).

The block of coal to be mined at Emerald is approximately 1,000 feet wide and 10,000 - 11,000 feet long. (TR 151). It normally takes about forty minutes for a 1,000 foot cut/pass along the panel. (TR 210). Eight cuts/passes are made per shift. The cut height is about seven feet and one half with a coal seam of about 8-12 inches. (TR 211). In the future the longwall length may be up to 14,000 feet under Emerald's approved roof control plan and the 1995 PDO. Further explicit details of

---

[5] "For each longwall mining section, the roof control plan shall specify - (a) The methods that will be used to maintain a safe travelway out of the section through the tailgate side of the longwall; and (b) the procedures that will be followed if a ground failure prevents travel out of the section through the tailgate side of the longwall." 30 C.F.R. § 75.215. Roof support regulations require that "[T]he method of mining shall not expose any person to hazards caused by excessive widths of rooms, crosscuts and entries, or faulty pillar recovery methods." 30 C.F.R. § 75.203(a).

[6] See Mr. Bryja's testimony at TR 133 for definition of "headgate" and "tailgate" as well as an explanation of airflow as depicted on CX 2.

the longwall mining operation are set forth in the Stipulations.

Emerald uses a "high" voltage, e.g., 4160 AC voltage, longwall mining system.[7] The voltage powers the longwall shearer, the face conveyor and the longwall stage loader. The great majority of longwall mining systems in the United States, use "high" voltage, i.e., exceeding 1,000 volts, as opposed to "low", i.e., below 660 volts, or "medium" voltage, between 661 and 1,000 volts.

Witness Testimony

Mr. Jim Bryja is the general manager at Emerald. (TR 82). He has been at Emerald for five years. He holds a Bachelor of Science degree from Penn State in mining engineering and a Masters in Business Administration from West Virginia. He is a certified mine foreman in four states and a registered mining professional engineer who is very experienced in the industry on medium and high-voltage longwall equipment and in longwall mining methods. (TR 83-94). He also worked as a coal miner himself doing nearly all mining tasks to develop practical experience. I find him a very credible, concerned and highly-qualified expert in longwall mining and the use of high-voltage equipment. (TR 94). Mr. Bryja carefully defined: each of the mining terms listed on CX 32,: a legend for CX 2 the map of Emerald's operation; and explained CX 2, among other matters. (TR 111-123).

Mr. Bryja described the high-voltage longwall equipment used at Emerald and in the industry as well as the merits of using it versus medium voltage equipment. He testified there are three primary factors in mine design: first, ventilation; second, ground or roof control; and, third, the mining method. (TR 84). The purpose of ventilation is to dilute, render harmless, and carry away methane gas and dust. (TR 85). The use of 2300 volts and 4160 volts in longwall mining is a common industry standard. He explained the three components of longwall mining: the shear, which cuts coal; the 1000 foot face conveyor with tracks conveying coal to the headgate; and, hydraulic roof supports or shields which advance mechanically to support the mine roof. Additionally, Emerald utilizes roof bolting and supplemental standing roof support to accommodate the longwall mine. (TR 134). The supplemental support is also used to keep the tailgate open for men as an escapeway and for ventilating air current. (TR 135). The bolts used for roof support have dramatically increased in size over the years. (TR 135-36). Increasing panel width would not result in greater pressure on the shields or increased abutment pressures in the longwall. (TR 194-6).

Mr. Bryja explained longwall mining is safer overall than continuous miner operations. (TR 169, 212). Since the longwall miners work under the solid steel shields, they are "removed from pretty much the hazards of the roof falling in." (TR 169). Safety analyses of the two procedures show longwall mining has a lower accident severity and frequency rate. (TR 170, 212). The majority of accidents at Emerald are related to injuries associated with construction, material handling and equipment set up. (TR 212-213). Thus, since wider panels will require fewer equipment moves, there will be fewer injuries. He described CX 2, a map of Emerald's operation, and CX 30, a chart depicting a typical longwall mining operation, in detail.

[7] Regulations of the Mine Safety and Health Administration define anything over 1000 volts as "high voltage". See 30 C.F.R. §§ 75.2. Medium voltage is that between 661 and 1,000 volts. *Id*.

Mr. Bryja was involved in drafting the 2000 PDO application which was needed to allow Emerald to take advantage of new technologies and operational flexibility. The major difference between the 1995 and 2000 PDOs is the elimination of matters dealt with in other (MSHA) mandatory safety standards. Mr. Bryja opined the electrical changes between the 1995 and 2000 PDO's were minimal. Emerald did not believe a panel size restriction was required in the 2000 PDO application. (TR 155). It needed the flexibility (of not including a panel size limitation) in order to operate safely, efficiently and profitably and to take advantage of technological improvements. (TR 155, 185). Flexibility was needed to deal with mine subsidence issues, avoiding gas wells, etc.. (TR 155-6). Mr. Bryja explained that gas wells could be avoided by locating the longwall process such that the well would be located in a pillar area in the gate versus in the active longwall panel.

Mr. Bryja concludes the 2000 PDO will at all times guarantee miners the same level of protection as the former standard and will result in a net safety gain by providing flexibility for longwall panel size which will reduce the number of panels mined and the need to unnecessarily move vast amounts of electrical and other equipment to new panels. (TR 166-8). The PDO will also provide flexibility dealing with gas wells and avoiding very cumbersome and dangerous in-panel moves. (TR 167). A restriction on longwall panel size is unnecessary to provide an equal measure of protection because the regulations already require a roof control and ventilation plan. (TR 172).

Mr. Bryja testified Emerald uses two sources of electrical power: diesel and battery. (TR 118). It stopped using trolley wires, which had 250-300 volts, in 1999, in part because they were bare, exposed, conductors and generated sparks. (TR 165-6). The advantage of high voltage longwall equipment is that it primarily consists of smaller components, i.e. motors, cable size, which generate less heat with fewer cables and better ground-fault protection. (TR 162, 211). Ground fault currents are greatly reduced with high-voltage longwalls than medium voltage ones. (TR 211). Miners generally do not handle medium voltage cables, but sometimes do. (TR 163). The approved 2000 PDO has restrictions on handling high voltage cables. Emerald has devices to handle electrical cables, such as a monorail in the headgate entry which runs parallel to the belt line. (TR 162, 164). The monorail holds, controls, protects and organizes the electrical cables and hydraulics. (TR 164). A "Bretby" cable handler contains and troughs the shearer cable as it moves. (TR 163-4). The purpose of 30 C.F.R. § 75.100 was to keep trolley wires 150 feet from the "gob". (TR 165). The pillar workings referred to in the standard is the area immediately behind the shields. (TR 165). The "electrical" changes between the 1995 PDO and the 2000 PDO are minimal in nature. The best mode for longwall mining is the use of high voltage equipment. It affords greater safety and is more efficient. Many longwall mines utilize high voltage equipment, which is more efficient. (TR 154, 193; CX 14). Medium voltage has been used on panels up to 1,000 feet wide.

MSHA approves Emerald's ventilation plans. (TR 143). At Emerald, 60,000 cubic feet per minute ("CFM") of air flows across the longwall. (TR 143). Emerald has three operating fans, i.e., two main fans of 10-foot diameter and 1250 horsepower and two combination intake and return fans, plus an eight-foot bleeder fan. (TR 112). Generally, two air intakes are needed to ventilate a longwall panel. However, sometime a third air intake is needed and the beltway can be used for that purpose. Fresh air is brought into the mine via intakes, ventilates the working sections, and exits the mine through return shafts exhausting through the fan. These fans move about 1,300,000 CFM. (TR 113). Emerald also uses some section fans located on each development section which ventilate the operating faces.

The section foreman makes two ventilation inspections each shift, at two locations on the face, at the headgate and tailgate, and weekly readings for methane concentrations, ventilation, and air velocity. (TR 143-5). Mine fans have devices to monitor their operations, i.e., to check bearing temperature and fan pressure. (TR 150-1). If a change in fan function occurs alarms sound. Emerald also has a central monitoring station for fan operation information. (TR 151).

Ventilation of longwall panels of differing lengths is no problem. There are not really any difficulties ventilating a 1,000 foot high-voltage panel over a 600 foot medium voltage panel. Before a longwall panel is mined, horizontal degassification holes are drilled into the coal seam to drain methane gas and vent it. (TR 138). Bleeder entries, such as #4 Bleeder on CX 2, are return air courses that take air which has ventilated the gob area and exhausts it out of the mine keeping it away from where mining is conducted. (TR 126, 137, 142). Bleeder entry fans maintain a positive air pressure to exhaust the methane gas out of the mine. (TR 142-3). Each longwall panel has three gob ventilation bore holes of eight inch diameter to remove methane from the gob in combination with self-propelling pumps. (TR 137-8). A longer gob line would not necessarily require more ventilation. The #1 shaft on CX 2 is a combination air intake and return shaft and Emerald's portal. #7 shaft is a combination air intake and return facility which is equipped with an emergency escape hatch. (TR 125). It is not necessary to ensure an equal measure of protection to include a condition in the 2000 PDO requiring two intake airways on the headgate as the UMWA wishes. (TR 171-2). This is because the existing mandatory standard requires Emerald to have a primary escapeway, ventilated with intake air as well as an alternate escapeway. (TR 171, 173). Under the 1995 PDO, another intake entry was located at the headgate. (TR 173). It generally takes two intakes to ventilate the longwall panel, particularly at its deepest extent. One could not adequately ventilate the deepest panel area on one intake and Emerald has used the belt as a third intake for a portion of a panel. (TR 182-3).

Methane gas is liberated in longwall mining from the freshly cut coal as well as the face. It is explosive in concentrations of about 15 percent. (TR 145). According to Mr. Bryja, methane concentrations are limited to one percent. (TR 144). If the level got to one percent, it would generally be caused by human error, i.e., leaving a door open. (TR 214). If the methane levels at the face increased, Emerald would adjust the ventilation according to the mandatory safety standard. (TR 144). Increasing longwall panel width does not either proportionately or linearly increase the release of methane. (TR 197). Emerald has the means to deal with any increased methane levels, in accordance with regulatory standards.

According to Mr. Bryja, airflow is measured twice per shift at the headgate and tailgate "outby".[8] Shearer operators have methane monitors and each must conduct tests every twenty minutes and prior to operating the shearer. (TR 145, 148). Two operators per work shift operate the shearer. The shearer machine itself has a methane monitor with a visible alarm which sounds at one percent concentrations. (TR 148). It de-energizes the continuous miner at two percent concentrations. Then the power goes off and the workers are evacuated. (TR 148). Methane checks must be made before

[8] The distinction between "inby" and "outby" is discussed at TR 297-299. Outby apparently begins 150 feet beyond the pillar working areas and before the high voltage distribution system gets to the longwall power center. Within 150 feet of those areas the equipment must be "permissible" as defined elsewhere herein.

starting the equipment and every twenty minutes while in operation. (TR 145). There are methane sensors at mid-face and at the tailgate. (TR 149). Methane monitor/sensor operators must qualify by passing a state examination. (TR 150). The 1995 PDO required a mid-face methane monitor not required by the 2000 PDO or the regulatory standard. However, the UMWA's desire to include in the 2000 PDO a requirement for a mid-face methane sensor is unnecessary to provide an equal measure of protection to that of section75.1002 because of the existing requirement to monitor at the shearer and the tailgate, the two areas most likely to detect an accumulation of methane. (TR 173). The shearer is the most likely ignition source and the tailgate sensor monitors the cumulative effect of all ventilating air current coming across the face. (TR 173).

Mr. Bryja testified that the current longwall width is 1,000 feet and length 10,000 feet. Longwall size has increased in the past years. (TR 151-2). Emerald plans wider longwall widths, i.e., up to 1250 feet. (TR 156-7, 186).[9] The parties conceded that any such size increase must be approved in a roof control plan. (TR 161). The 2000 PDO application did not address longwall size because Emerald needed flexibility, e.g., to mitigate surface subsidence and work around gas wells. Emerald's 1,000 foot face is not unusual in the industry and there are wider faces, even in the Pittsburgh number 8 seam. (TR 153-4). The planned 1250 foot panel would only be 50 feet wider than what is currently being mined. (TR 187; CX 14).

Mr. Bryja testified that certain topics, such as rock dusting, intake airways on headgates, restrictions on panel size, respirable dust limits, rock dust, float dust and various methane monitors, were not included in the 2000 PDO or Emerald's application because those matters are addressed under other mandatory safety standards. Moreover, Emerald has arranged for evacuation of miners with mantrips and a unique aluminum carrier/stretcher which runs on the face conveyor on the pan line. (TR 174). Emerald and MSHA both sample for float dust and the allowable amounts are governed by a mandatory safety standard. The training provision the UMWA wants in the 2000 PDO is not needed to ensure an equal measure of protection because Emerald will train employees on the new PDO and is required by other standards to provide refresher or annual training. (TR 172).

The purpose of rock dusting is to mitigate any adverse impact should there be a mine fire or explosion. (TR 171). The UMWA's proposal to not begin a subsequent work shift should the rock duster malfunction is unnecessary in the 2000 PDO because Emerald is required by a mandatory safety standard to maintain the tailgate entry of 80 percent of combustible material. (TR 171). The mandatory standard and the requirement in the 1995 PDO concerning rock dusting are nearly identical. Mr. Bryja testified in rebuttal that Emerald has made dust control changes for the longwall operation which may not be visible. (TR 519). It has added venturi nozzles and lengthened the boom extending it toward the tailgate. (TR 519). It has also changed the type of belting to polyurethane rubber. (TR 519). Emerald has also increased the minimum pressure on shearer drums, spray boom and stage

[9] In Emerald's case in chief, I precluded testimony concerning speculation concerning Emerald's plans for longwall panels over 1250 feet. (TR 161, 274-281). Mr. Bryja testified Emerald had no current plans for panels over 1250 feet. (TR 186). Moreover, as I noted at the hearing, neither Emerald's application, MSHA's investigation, nor the 2000 PDO address longwall panel size. (TR 277). MSHA agreed that plans for wider longwall panels would have to be addressed in a new roof control plan. (TR 278). I have reconsidered my ruling to consider evidence involving panel size up to 1250 feet and now consider it. (TR 281).

loader and replaced the booster pump to charge water. (TR 519-20). The increased water pressure helps contain and control dust. Dust generation is a function of the mining rate but not in a linear ratio. Emerald has the newest longwall systems, the newest hydraulic pumps and the newest filtration systems all of which makes the shield more reliable. (TR 520-21). Section 75.400-1 deals with "float" dust, which can propagate methane explosions. Mr. Bryja did not believe Emerald had been cited for not being in compliance with float dust in the tailgate standard in at least the last several years. It was cited once in the past three years for a violation of the respirable dust standard. (TR 208). Respirable dust samples must be taken bimonthly although MSHA requires quarterly samples. (TR 208-9). MSHA itself tests for respirable dust. (TR 215). Mr. Bryja explained the procedures Emerald uses to control respirable dust. (TR 216). If Emerald was not in compliance with the respirable dust standards, MSHA would require a modification of its ventilation and dust control plan. (TR 216-7).

According to Mr. Bryja, dust generation and methane gas release is a function of the mining rate. (TR 524-25). There may be some "modest" increases with wider panels, but Emerald has methods, which he described, for dealing with it. (TR 524). Studies show there is no linear correlation between methane release and the width of the longwall panel. (TR 525). Concerning miner Billetz's comments, although unlikely, methane gas from the gob would likely escape only if the #4 bleeder fan failed. (TR 521-23). If it failed, Emerald has backups to prevent failure, i.e., two parallel measurement systems, two fans, two electric motors and diesel engine power to ventilate if the electricity fails. (TR 522-23). If all else fails, fire alarms automatically sound. (TR 522). Methane gas monitors are calibrated and checked twice every shift as well as the methane gas level. (TR 526). Hand held devices are used for the calibration. (TR 527). The shearer operator checks methane levels every twenty minutes during operations with a hand held device. (TR 527). The longwall face has been shutdown due to gas and operations ceased. (TR 528).

Mr. Guy Jones has been the staff electrical engineer and "MSHA-qualified" mine electrician at Emerald for over four years and was involved in the drafting of the PDO application. (TR 219, 229, 331). His extensive industry experience includes expert familiarity with use of medium and high-voltage in longwall operations. He has worked on medium voltage longwall mining. He holds a Bachelor of Science degree in Engineering Technology and holds mine foreman papers from Pennsylvania and Illinois. Mr. Jones is responsible for the high voltage system at Emerald. (TR 220). I find Mr. Jones a very credible and concerned expert witness. (TR 231).

Mr. Jones explained the various electrical terms referred to in this proceeding, as well as Emerald's electrical distribution system, reflected in CX 5. (TR 232). He explained the process whereby the 25,000 volts Emerald buys from Allegheny Power is stepped down as it progresses through various sized cables, "4/0" wire about 2.5-3.0 inches thick, through a substation, longwall master control center, transformers and circuit breakers, and a longwall power center, throughout the mine. Only 12,247 volts go underground. The longwall master controller, located at the headgate, monitors electrical usage, motor electrical usage, methane monitors, and has the ability to stop the mining process. The longwall power center, which transforms the voltage down to 4160 volts, is usually about 550 feet from the face. (TR 237). Emerald has two substations which service the underground mine, both of which have a 25 amp ground fault resistance. (TR 295). While Emerald uses a scheme as described in item 6 of the 2000 PDO, i.e. ground fault protection at 40 percent of the

maximum voltage, it is not a requirement. (TR 300). Mr. Jones believes the maximum allowed is 50 amps. The 3.75 amp requirement for the neutral grounding resistor in item 3 of the 2000 PDO is safer. (TR 295-6). While there is no mandatory standard or requirement for protection against sustained ground faults particularly dealing with thermal protection, i.e., item 7 (2000 PDO), Emerald does so for the safe operation of the equipment. (TR 300).

Mr. Jones explained how the electrical cables are distributed throughout the mine and how they are routed through the Bretby, suspended off the ground on a monorail and used on the shearer. (TR 251-2). Medium voltage systems typically did not require such a monorail system and cables typically touched the ground. (TR 251). That creates a greater potential for cable damage. (TR 252). Mr. Jones described "permissible" and "non-permissible" electrical equipment. (TR 252-3). "Permissible" equipment will have a flame path which in the event of an ignition of gas inside the enclosure will cool to the point where it will not ignite a methane-air mixture outside the enclosure. (TR 253). Equipment lacking such a protective flame path enclosure which may cause an ignition is "non-permissible". Section 75.1002 proscribes high voltage within 150 feet "inby" of the last open cross cut or the face. (TR 324). Under the current standard, medium voltage equipment is permitted inby the last open cross cut. (TR 324). Under the current standard, medium voltage equipment could permissibly be moved within 150 feet of the face or pillar line (gob line) without MSHA approval but not high voltage equipment. (TR 324-331). Admittedly, there are standards for the use of medium voltage equipment inby. (TR 331).

Mr. Jones testified that when the section 75.1002 standard was written there were no high voltage longwalls or permissible equipment. (TR 253). Without the 2000 PDO Emerald could only utilize a medium voltage system. He discussed the terms and conditions of the PDO line by line, explained electrical terms and systems, described the equipment using high voltage and concluded the use of high-voltage equipment provides significant safety advantages over medium voltage longwall equipment required by the regulatory standard. He believes use of the high voltage under the 2000 PDO provides a greater or enhanced degree of safety and more safety than use of a medium voltage system and the standard, under section 75.1002. He recommended changing the language in item 9 of the 2000 PDO from "each individual relay" to "each over-current relay." (TR 334).

Mr. Jones testified the advantages of high voltage longwall equipment over medium voltage equipment are: first, smaller cables, because less current is needed to produce the same horsepower in equipment; second, fewer electrical cables; and the third, and "biggest" advantage is ground fault protection is limited to much lower levels than in medium voltage systems, with the advantage of reducing the chance of electrical shock. (TR 244-245). Medium voltage systems go up to 25 amps, but high voltage systems only go to 3.75 amps which reduces the chance of electrical shock and lessens any chance of injury. (TR 245-6). A further advantage of high voltage systems is that each conductor has more shielding around it. (TR 246). High voltage cables are smaller because it takes less current to produce the same amount of horsepower and as long as cables are properly sized there will not be a problem with heating in the conductors. (TR 247-8).

According to Mr. Jones, Emerald's ground fault monitoring equipment, a PDI relay, trips

electrical power off instantaneously (to 1/4 second) at a "very low" level of 125 milliamps whereas a medium voltage system would normally trip off at the much higher level of 6 amps and not instantaneously which makes the former system safer. (TR 248-9, 259-261). Moreover, a typical medium voltage system would not have the backup ground fault protection required by the 2000 PDO. (TR 261-2). The required handling, installation and removal of cables is affected by its size. (TR 250).

Mr. Jones testified about most of the conditions set forth in the 2000 PDO. (TR 254 *et seq*.). A medium voltage system is not required to have the protection for the high voltage neutral grounding resistor that will de-energize the longwall power center if the grounding resistor is subjected to a sustained ground fault. (TR 263-4). Both high voltage and medium voltage systems are required to have instantaneous short circuit protection as required by item 8 of the 2000 PDO, but typically not the short circuit protection for the longwall power center to the longwall starter enclosure power. (TR 266). While item 4 of the 2000 PDO does not proscribe energizing a cable against a ground fault, Emerald uses protective relaying to sense ground faults by means of a look-ahead testing circuit which precludes energizing the cables when the resistance falls below a pre-set level in the relay, an added level of protection to prevent ground faults. (TR 295). The monitoring requirement in item 10, for each high voltage cable supplying a common bus in the longwall starter enclosure, is stricter than he has seen in medium voltage systems. (TR 305). The primary visible disconnecting device to de-energize the primary of the high voltage transformers when the device is open, set out in item 11, is not required of medium voltage systems and is safer than the latter's typical couplers. (TR 305-6). Medium voltage systems typically are not required to have a secondary 4,160 volt disconnecting device to de-energize all high voltage cables extending to and from the longwall starter enclosure when the device is open, as in items 12 and 13. (TR 307-8). Medium voltage systems do not require the disconnect device mentioned in item 14. (TR 308). Condition 15, 2000 PDO, is not applicable by its own terms because a separate section 101(c) petition granted Emerald permits the use of a more durable, easier to maintain, and safer alternative SHD plus GC or SHD-CGC cable with center ground check which reduces inner machine arching. (TR 310-311). The splicing requirements of item 16, 2000 PDO, which mandates moisture excluding repair kits, are superior to requirements for medium voltage cable. (TR 311-12). The minor repair provision is equal to the one in the 1995 PDO. (TR 337-8). Items 17 and 18 require guarding high voltage cables where miners work or travel. (TR 312-313). Emerald uses "hard guarding" with pipes and "split guarding" whereas only conduit would be used in medium voltage systems. (TR 313). A medium voltage systems would not require prohibitions on handling cable such as item 20 or inspecting high voltage personal protective equipment. (TR 314-315). The barriers required in items 22, 23, 24 and 25 are not required in medium voltage systems. (TR 315-6). Item 26, interlock switches, would be the same for both high voltage systems and medium voltage systems but the latter system would not require the interlock switch for the longwall starter enclosure. (TR 317). Mr. Jones explained the utilization of eight-foot wide, 150 pound cover plates or switches and side covers bolted over various high voltage systems which automatically turn off power if raised prior to de-energization. (TR 317). Medium voltage systems typically do not require the interlock with the primary disconnecting device for the power center set out in item 28. (TR 318). Usually, caution labels are only placed on high voltage compartments, but item 30's requirement would be the same. (TR 318-9). Medium voltage systems do not require the use of a "main" to ground power factor capacitors, as required in item 29. (TR 319). Longwall high voltage equipment must be intrinsically safe or approved by MSHA; that makes it "permissible" equipment. (TR 321).

According to Mr. Jones, the requirements of items 32, 33, and 34, preparation for electrical work, are much the same for medium and high voltage systems. However, medium volt systems do not require the grounding. (TR 320). Miners may handle medium voltage cables while energized but not high voltage cables. (TR 338). Cables used in medium voltage systems are much heavier than high voltage cables. (TR 250). While faults in "powered" medium voltage cables may be troubleshot, the power must be off for maintenance or when repairs are made. (TR 338-9). High voltage cables must be de-energized, except for "control" (120 volt) power, before troubleshooting. (TR 339). Most of the equipment presently operated by miners at Emerald is medium voltage, the rest is low voltage equipment. (TR 339). The only equipment operating inby the last open cross cut or within 150 feet of the pillar line is the high voltage longwall equipment. (TR 340).

Mr. John M. Gallick has been Emerald's safety manager for seven years. (TR 343). He not only has extensive industry experience, i.e., general mine laborer, assistant mine foreman, and progressively in safety positions with increasing responsibility, but a B.S. and a Masters degree in business safety management. He is certified as an MSHA trainer. I found Mr. Gallick to be a very credible and concerned expert in mine safety and mine emergencies. (TR 352).

Mr. Gallick was involved in developing Emerald's PDO applications, roof control, ventilation and industrial hygiene plans. (TR 350). The UMWA commented on and participated in MSHA meetings developing Emerald's ventilation and roof control plans. Further, the UMWA contract requires ten days notice of changes to mining operations. Roof control plans are mandatory and violations result in MSHA citations. He discussed the advantages of the 2000 PDO and how it does not reduce the measure of protection afforded by the standard. He testified that rock dust, respirable dust, methane sensors, among other topics, are addressed in the regulatory standards. MSHA is at Emerald conducting inspections 440 "inspection" days per year. (TR 352). Additionally, Pennsylvania conducts inspections. Mr. Gallick explained the process required to change mine plans.

Mr. Gallick testified that with the 1995 PDO Emerald was moving from medium voltage, i.e., 2300 volts, to high voltage, 4160 volts. The evolution of the 1995 PDO involved negotiations with the UMWA and MSHA. (TR 353). The 1995 PDO prevented Emerald from operating in the manner it wished. (TR 354). The thrust of the 2000 PDO application was to eliminate all non-electrical standards from the 1995 PDO and keep the electrical provisions the same. (TR 354). That is typical of petitions from and PDOs applicable to other mines. Removal of the longwall panel size terms from the 2000 PDO results in an equal measure of protection. (TR 355). The regulations for the roof control plan do not refer to explicit longwall panel sizes. Rather, MSHA approval for changes in panel size must be requested via a roof control plan which explicitly establishes size. (TR 356, 409). Emerald's existing MSHA approved roof control plan allows for a 1050 foot width. (TR 357).

Most of the 1995 PDO is carried forward into the 2000 PDO. Mr. Gallick testified that item #39 of the 1995 PDO was not carried over to the 2000 PDO. (TR 338-9). 30 C.F.R. § 75.380 addresses primary escapeways. Item #39 does not require two intake "escapeways", but rather two intake "travelways"one of which will be the primary escapeway. (TR 359). Travelways are not governed by size standards unlike escapeways which are subject to performance standards, i.e., section 75.380. Section 75.380 requires a primary escapeway, which must be an air intake and an alternate escapeway with less stringent requirements. (TR 363). Emerald's primary escapeway is on

the #2 entry headgate and the alternate is at the tailgate, a walking escapeway. In 1994-1995, Emerald's primary escapeway was a "walking" one. It was changed to a track or riding system. (TR 363). Item #39 from the 1995 PDO is not needed in the 2000 PDO to ensure an equal measure of protection to section 75.1002. (TR 364). The MSHA escapeway requirement calls for the exclusion of potential fire sources from primary escapeways except for some equipment to keep the escapeway open and to transport miners. (TR 360-1). The lifeline requirement, in the 1995 PDO, is not in the 2000 PDO since it was not required by the regulation and Emerald now uses a mechanized riding escape system instead of the former walking method. (TR 361-2). The tailgate entry, which is 16 feet wide and must be four feet high, is occasionally used as an alternate escapeway. (TR 413). It is presently supported by roof bolts and pumpable 30 inch cement supports. (TR 412). Miners receive escape training. (TR 413). In a recent roof fall, the tailgate was used as a primary evacuation route. (TR 400).

Item #40 of the 1995 PDO was not included in the 2000 PDO since it is set forth word for word in the regulations and Emerald's mandatory roof control plan. (TR 365). Item #41 of the 1995 PDO is not restated in the 2000 PDO because rock dusting is covered by the mandatory standards set forth in section 75.400. (TR 365). Item #41 of the 1995 PDO is not needed in the 2000 PDO in order to ensure an equal measure of protection. The regulations have performance standards which permit Emerald to decide how to maintain an 80 percent content. (TR 365). Emerald's present rock dusting system is the best, but need not be included in the 2000 PDO. Emerald plans to continue to rock dust in the tailgate because it works best for it. (TR 419). If float dust accumulated on top of rock dust there is no regard for the 80 percent standard and that could amount to a violation of MSHA requirements. (TR391-3).

Item #43 of the 1995 PDO (methane sensors) was removed from the 2000 PDO because it is covered in the regulations at section 75.342. (TR 371-2). It is not needed in the 2000 PDO in order to ensure an equal measure of protection. (TR 373). Emerald's methane and dust plans are the equivalent of a respirable dust plan. Item #43 of the 1995 PDO, dealing with methane monitoring, was removed because methane monitoring is covered by section 75.342, which requires monitors on the shearer and at the tailgate. Before 1992, the regulations required mid-face methane monitors on longwalls. In 1993, the regulations were changed to require them on shearer machines. This change has been effective. Mid-face methane monitors are not needed to ensure an equal measure of protection, but could provide some incremental increase in monitoring. (TR 390).

Mr. Gallick is largely responsible for training at Emerald. (TR 393). The 2000 PDO training requirements are the same as in the 1995 PDO. (TR 373). 30 C.F.R. Part 48 requires annual retraining. The training given miners in high voltage longwall mining are adequate. (TR 374). Every employee has safety responsibilities. (TR 418). Task training, which includes high voltage matters, is usually done by a foreman or other employees. (TR 393, 415, 417-8). He believed everyone had been trained on the 1995 PDO. (TR 394).

Mr. Gallick explained the characteristics of float dust. Float dust is explosive only in extremely high concentrations (when irrespirable) and is not a principal ignitor, but rather a propagator. Rock dust prevents float dust from participating in an explosion. (TR 367-9).

Item 42 of the 1995 PDO (respirable dust sampling) was not included in the 2000 PDO because it is already a mandatory standard in the regulations and is not needed to provide an equal measure of protection. (TR 370-1). Mr. Gallick testified Emerald tests for respirable dust every two months. Five samples are taken downwind of the shearer and sent to MSHA which are averaged. (TR 375). If respirable dust is less than 2 milligrams, the mine is in compliance. MSHA itself samples for respirable dust every two months taking individual samples on each face. (TR 376). As longwall panel length increases, respirable dust does not increase proportionately. (TR 376-7). For example, sometimes an 800 foot face has more respirable dust than a 1,000 foot one.

Mine ventilation is governed by the requirement for an MSHA approved ventilation plan. (TR 363). MSHA reviews such plans every six months or more frequently and evaluates whether there are sufficient intakes. Ventilating the mine at its furthest point requires at least two intake entries, and sometimes a third might be used. (TR 395). The 1995 PDO requiring Emerald to use the beltway as an intake created a double burden, e.g., requiring using belt air. (TR 397). The 1995 PDO required two intakes, one of which had to be an escapeway. Each party interpreted these provisions as requiring a different location. There could be some benefit if an additional intake was not one of the two required escapeways. But, the elimination of one intake entry in the new PDO would not have an adverse effect. (TR 395). Emerald would typically plan for operating two intakes on the headgate side of the longwall. (TR 395). "The difference is that those two entries would be intakes and not have the other language around them." (TR 395). Maintaining a four foot travelway in the tailgate to permit evacuation of miners could provide a marginal safety benefit. (TR 400). Mr. Gallick explained the reasons Emerald does not wish to use the belt conveyor entry to take air to the face. (TR 414). Primarily, the entry can be rock-dusted during work shifts and more frequently if the airflow is away from the face rather than to it. A petition for Emerald's current ventilation plan was filed in 1982 or 1983. A negotiated settlement regarding the plan was reached in 1999. Some of the belt air requirements are unique to Emerald, i.e., velocity requirements, but most of it is generic.

Mr. Gallick testified about the high voltage longwall PDOs of three other mines, referred to in CX 22, 24 and 25. CX 22, Consolidated's PDO, does not contain: panel size limitations, rock dusting provisions, mid-face methane monitoring provisions, two intake airways at the headgate provisions, but the training requirement is similar to the 2000 PDO. (TR 382). The same is true of CX 24, Consolidated's PDO. (TR 383-4). Consolidated is a UMWA mine. CX 25, Ohio Valley's PDO is also much the same. (TR 386). Their PDO is nearly identical to the 2000 PDO. Ohio Valley is a UMWA mine. He concludes the vast majority of coal mines do not have non-electrical standards contained in PDOs applicable to them. (TR 387). He believes the 2000 PDO meets or exceeds the requirements of section 72.1002. (TR 387). Considering all the effects, the 2000 PDO achieves a net gain in overall mine safety because it makes operation of high voltage equipment safe and effective, a matter which he felt Mr. Jones' testimony demonstrated. (TR 387-8).

Mr. Gallick did not believe reference to a separate section 101(c) petition in item 15 was confusing because it has been in existence for several years. (TR 379). Nor is it necessary to define "minor" repairs to provide an equal measure of protection because "major" repairs are very clearly defined. (TR 379). There is no reason to delete the first line of item 38, requiring MSHA to inspect the longwall before it is placed in service. (TR 379). The 2000 PDO requires Emerald to notify MSHA before putting a longwall in service and it is up to MSHA whether it inspects. (TR 380).

In rebuttal, Mr. Gallick testified he tracks violations and accidents at Emerald and there have been no electric related injuries. (TR 507). Over the last several years, Emerald has had one of the lowest violation rates in the Pittsburgh seam or the U.S.. Emerald has had no injuries related to high voltage equipment, e.g., electrical shocks, since he has worked there. (TR 507).

Coal miner John Cochran testified for the UMWA. (TR 453). He is a general inside laborer who has worked seven years at Emerald. He testified he was never trained on the 1995 PDO. However, he received task training on the continuous miner which he has operated for years. He worked on the longwall twice, running the shearer, four to five months ago and more recently two weeks before the hearing. (TR 456). He believes task training is important. (TR 457).

Coal mine mechanic Gary Billetz testified for the UMWA. (TR 428). I found his testimony credible and sincere. He has worked for Emerald on the longwall face for twelve years. He maintains and repairs longwall equipment and all electrical and hydraulic equipment associated with longwall mining. (TR 430). He would be the one to repair and calibrate methane sensors. (TR 437-8). He agreed it is everyone's job one the longwall face to make sure the work is safe. (TR 438). Emerald used 1,000 volts when he began there about eight years ago and then went to 2,300 volts. (TR 437). He has reviewed both the 1995 and 2000 PDOs. He is aware of no fatalities at Emerald due to high voltage systems. Mr. Billetz admitted the high voltage system has made equipment larger and easier to repair. He does not believe the 2000 PDO provides greater protection than the 1995 PDO, because the latter had the added rock dust and methane gas monitoring protections. (TR 430). Moreover, he believes the 2000 PDO provides less safety than section 75.1002 because it took out some standards with safety benefits. (TR 431). Since the regulation does not allow high voltage equipment at the face and the 2000 PDO does, it offers less protection. (TR 431). On cross-examination, he admitted one cannot compare the 2000 PDO permitting high voltage systems with the section 75.1002 standard because the latter does not address high voltage systems inby the last open cross-cut or within 150 feet of pillar workings. (TR 444).

Mr. Billetz likes the mid-face methane monitor because he can compare monitors to ascertain if they are working properly and it is a good back up. (TR 432). MSHA requires monitor checks every thirty-one days. He would repair or recalibrate methane sensors every 30 days unless they were defective or unless brought to his attention earlier. (TR 438-9). He says there is no way to know if the tailgate methane sensor is not properly calibrated. (TR 439). Sometimes it gets clogged and reads low. He said the foreman carries a methane sensor too. An employee is also stationed where he can watch methane sensors on the headgate. (TR 441). He believes all the methane sensors are about equally reliable, but the tailgate one is probably one of the worst because it is exposed to the harshest conditions. (TR 442). It should be recalibrated weekly.

According to Mr. Billetz, outby high voltage is totally different than what Emerald does now. (TR 434). He has seen high voltage equipment damaged from short circuits. (TR 434). The 2000 PDO must be written to provide more protection, i.e., lower trip settings, because the miners work in such proximity to the high voltage cable in wet conditions. (TR 434-5). Although they do not work outby, the outby system is written to protect equipment not people. (TR 435). The inby system is written to protect people. (TR 435). Mr. Billetz would like to see the standards in the 1995 PDO

included in the 2000 PDO to enhance safety. (TR 435).

Mr. Billetz believes the mine is dustier and has more methane gas with high voltage longwall systems than with medium voltage because the operator can mine more coal faster. (TR 448). He admits the water pressure on sprayers has been increased and the new longwall shield sprays surfactant to suppress dust along the belt line. (TR 450-2). He has not seen any injuries resulting from Emerald's use of a high voltage system. (TR 446). He is primarily concerned with the shock potential of high voltage systems even though 900 volts could be lethal. (TR 446). Use of the high voltage system has made his working conditions better. (TR 447).

Mr. Robert L. Phillips works in MSHA's Division of Safety as a coal mine safety and health specialist. (TR 460). I find his testimony credible and sincere. He is responsible for processing electrical petitions, diesel matters, fire protection, and developing policy, as well as interpreting electrical regulations. He has been with MSHA for fifteen years. (TR 460-1). He is certified as an electrician by MSHA and West Virginia. He is trained in and familiar with roof control and respirable dust. He has an Associate's degree in electrical engineering and 53 hours of University of Kentucky mining engineering training and 860 hours electrical training from the U.S. Army Corps of Engineers. (TR 462). He inspects coal mines and is familiar with Emerald. He personally participated in and reviewed the investigation into the present petition, met with Emerald and UMWA representatives and drafted the 2000 PDO. (TR 464, 465). Before drafting the 2000 PDO, he reviewed Emerald's ventilation and roof control plans. Although nearly identical to the 1995 PDO, the 2000 PDO enhances safety and in no way diminishes safety because of the extra safeguards built into the system. He basically testified the section 75.1002 standard, originally set in 1970, is outmoded. (TR 471).

He has reviewed the majority, about 59, of high voltage longwall petitions applicable to the industry. (TR 465). Of those petitions, only four have rock dusting requirements, only six or seven mention panel size restrictions. (TR 484). None require mid-face methane monitors and possibly only one required an intake airway on the headgate. (TR 484). Those conditions were previously included because they had been agreed upon in negotiations. The 2000 PDO training language is the standard MSHA language. The deliberate omission of a mid-face methane sensor condition in the 2000 PDO was based upon his analysis of Emerald's roof control plan, ventilation plan, frictional ignitions at the face, and lack of electrical accidents. (TR 491). Mr. Billetz's concerns about methane monitoring can be alleviate with the ventilation plan. (TR 498). Some section 75.1002 PDOs contain conditions referring to other sections of law, such as self-contained rescue devices. (TR 502-3).

According to Mr. Phillips, since 1970 there have been 237 direct "electrical" fatalities in coal mines none of which have been related to high voltage longwall systems. (TR 482). The 2000 PDO in no way diminishes miner safety because high voltage system's extra features are better than use of medium voltage systems. The 2000 PDO is pretty much MSHA's standard one for high voltage longwall systems. (TR 483). The "extra" conditions the UMWA seeks to reinstate (from the 1995 PDO), i.e., rock dusting, methane sensors, and intake airways, are not normally covered in a PDO for high voltage longwall systems. (TR 483). Such unnecessary "extras" would only be included if agreed upon in negotiations and safe. The training language in the 2000 PDO is MSHA's standard language. The likelihood or potential for electrical shock is determined to an extent by the setting of the ground fault current; the lower the setting, the less potential for shock. (TR 486-7).

Mr. Phillips described the "humongous" review process required for PDOs. (TR 466). MSHA grants PDO petitions to take advantage of new technology until its regulations catch up. The 2000 PDO eliminated provisions of the 1995 PDO. Emerald's petition pretty well tracked others for section 75.1002. Between 1995 and 2000 electrical standards did not change much, except clarification of major repairs. (TR 467-8). MSHA seeks uniformity in similar PDOs. (TR 469). MSHA will add conditions to PDOs if the UMWA and mine operator agree and safety is not reduced. (TR 469). The 2000 PDO offers the same level of protection as section 75.1002. (TR 470). Electric-wise, it offers a net gain in protection, e.g., better short circuit protection, better shielded cables. (TR 470). He is 100 percent certain the ground fault protection standards (2000 PDO) will protect miners, even those standing in water, around high voltage systems. (TR 496). A number of the provisions the UMWA would like to see restated in the 2000 PDO are already covered by other mandatory standards which MSHA will enforce. (TR 470-1).

Mr. Phillips described GX 1, dealing with underground mining high voltage use. (TR 472). It has been in the mill since 1985 and when approved will change sections 75.1002, 75.1813, 75.1822, and 75.800 (high voltage rules). (TR 476). He tried to draft current high voltage PDOs, such as the 2000 PDO, so they will be in compliance with GX-1 if and when it is enacted. (TR 477). Item 9 of the 2000 PDO incorrectly states "ground fault" relay rather than "over-current" relay. (TR 486).

He explained "permissible" longwall mining equipment is subject to MSHA approval and certification and it cannot ignite surrounding methane gas-air. (TR 499). Permissible equipment may be placed within 150 feet of longwall pillars and the gob. MSHA inspectors test for permissibility. High voltage equipment and transformers were (formerly) proscribed from that area, under section 75.1002, because if a cave-in occurred in the gob it would push methane out into the area where otherwise non-permissible equipment could be installed and create a situation for a mine explosion. (TR 493-4). Mr. Phillips testified longwall high voltage cables are suspended from the mine roof on a monorail which keeps them off the mine floor. (TR 501). The shearer cable is in the Bretby and outby which keeps it off the mine floor. (TR 501). The 2000 PDO permits high voltage equipment inby.

Mr. Phillips testified that MSHA shares Mr. Billetz's concerns about miners working safely near high voltage cables. That is the reason for the conditions dealing with reduced settings, reduced tripping on the ground fault conditions, and the shock exposure. (TR 495). With the required cable shielding, grounding and fault requirements, even if a cable is accidently damaged, the maximum voltage a miner would be exposed to is a 100 volts. (TR 495-6).

Mr. Edward S. Zeglen, Jr., testified in rebuttal. (TR 508). He holds a Mining Engineering degree and has twenty years mining experience. (TR 508). He has worked at Emerald for two years. As a senior mining engineer, he handles roof and ventilation plans. Emerald's most recent ventilation annual plan was approved in April 2001. (CX 34). CX 34 is only part of the 91-page plan dealing with longwall mining, degassification systems, respirable dust, and coal float. (TR 509). The UMWA participated in drafting it and Emerald made changes based upon the union's suggestions. (TR 517). He testified concerning its details. The items in red are changes from the previous years plan. Mr. Zeglin discussed various dust suppression systems in the plan. (TR 510-13). The air velocity provisions help dilute and render harmless both dust and methane. (TR 513).

V. DISCUSSION OF FACTS AND LAW

In its declaration of purpose, the Federal Mine Health and Safety Act declares " the first priority and concern of all in the coal or other mining industry must be the health and safety of its most precious resource- the miner." 30 U.S.C. § 801(a). The Act further states, "the operators of such mines with the assistance of the miners have the primary responsibility to prevent the existence of such [unsafe and unhealthful] conditions and practices in such mines." 30 U.S.C. § 801(e). The regulations are to be carried out to give effect to the purposes of the Act by assuring adequate protection of miners and to secure just and prompt determination of all proceedings consistent with adequate consideration of the issues involved. 30 C.F. R. § 44.1(b). As the UMWA's law clerk, Ms. Tripi, so aptly states, "[T]hese affirmations of purpose underscore the Act's central premise that miner safety must trump concerns of efficiency and profit in deciding close questions of law." (UMWA Brief at 9). However, the fact Emerald wishes to operate its mine in an efficient and profitable manner is neither nefarious or wrong as the UMWA suggests. Provided all safety criteria are met, common experience shows Emerald's safe, efficient and profitable operation should provide secure employment for UMWA members for the foreseeable future.

In the Federal Mine Health and Safety Act of 1977 (the "Act"), 30 U.S.C. § 801, *et seq*., Congress established a detailed set of mandatory safety standards applicable to underground coal mining. *See*, 30 U.S.C. §§ 841-878. Section 101(c) of the Act allows the Secretary to grant a petition to modify the application of a mandatory safety standard to a mine if she:

> determines that an alternative method of achieving the result of such standard exists which will at all times guarantee no less than the same measure of protection afforded the miners of such mine by such standard or that the application of such standard to such mine will result in a diminution of safety to the miners in such mine.

30 U.S.C. § 811(c). The standard is codified at 30 C.F.R. § 44.4.[10] The Secretary exercises her authority through the MSHA Assistant Secretary.

In *International Union, UMWA v. MSHA (Cyprus Emerald)*, 920 F.2d 960 (D.C. Cir. 1990), the Court adopted the MSHA two-step process for evaluating petitions for modification of mine safety standards. Thus, the two issues before this tribunal for evaluation are:

> I. Whether, the conditions of the modification of 30 C.F.R. § 75.1002, dealing with "trolley wires and trolley feeder wires", set forth in the Proposed Decision & Order

---

[10] 30 C.F.R. § 44.4 states:

(a) A petition for modification of the application of a mandatory safety standard may be granted upon determination that:

(1) An alternative method of achieving the result of the standard exists that will at all times guarantee no less than the same measure of protection afforded by the standard, or

(2) Application of the standard will result in a diminution of safety to the miners.

("PDO") of the MSHA**,** dated 9/5/00, will at all times guarantee no less than the same measure of protection afforded the miners at such mine by mandatory safety standard, 30 C.F.R. § 75.1002? (30 U.S.C. § 811(c) and 30 C.F.R. §§ 44.4(a)(1) & 44.14(c)(2)(i)).

II**.** Taking into account both the advantages and disadvantages of the alternative method set forth in the 2000 PDO, including effects unrelated to the goals of the original standard, if the approved modification will achieve a net gain or at least equivalence in overall mine safety?

As the Court pointed out in *Cyprus Emerald*, the first step "appears aimed at meeting § 101(c)'s requirement that the alternative method "achieve the result" of the original standard in the sense of addressing the hazards at which it was aimed, the second at assuring "the same measure of protection." *Cyprus Emerald* at 963.

> The "result" clause is less stringent than the requirement of "the same measure of protection," and thus is reasonably read as requiring that the modification promote the specific safety goals of the original standard . . . with roughly comparable success. Id. In step two, the Assistant Secretary then determines whether the modification achieves a net gain in mine safety (or at least equivalence) taking all effects into account.

Cyprus Emerald at 963. Mining safety standards are interrelated, thus modification of one standard can not be evaluated individually. *See, International Union, UMWA v. MSHA (Cyprus Emerald)*, 920 F.2d 960 (D.C. Cir. 1990).

As the Court pointed out in *International Union, UMWA v. FMSHA (Quarto Mining)*, 924 F.2d 340, 343 (D.C. Cir. 1991), "in certain circumstances, it can be difficult to conduct this inquiry." In certain instances, where the existing safety regulation is either based on outmoded technology or inappropriate for newly developed mining techniques, "it rings false to conduct an inquiry into whether the proposed modification promotes the same safety goals as the existing regulation." Then the question is "whether the proposed modification would provide as much safety as a regulation that itself may have less than satisfactory safety benefits. . . (and) examine every disadvantage associated with the removal of the existing regulation and weigh theses detriments against unrelated safety gains resulting from the proposed modification." *Quarto Mining* at 343.

In approving a PDO, it is appropriate to consider the fact that other mandatory mine safety regulations address concerns raised by parties opposing approved PDO. *International Union, UMWA v. MSHA (Jim Walter)*, 931 F.2d 908 (D.C. Cir. 1991). In *Jim Walter*, the Court upheld the MSHA-approved PDO concerning the same standard at issue in the case *sub judice*. There the UMWA had raised similar concerns, e.g., methane, dust, ventilation, panel size, and escapeways.

The starting point of this inquiry is not the 1995 PDO with all of its terms and conditions, but rather a comparison of the safety aspects of the present PDO (2000 PDO) with the present regulatory

standard found in section 75.1002.[11] I had previously determined the standard for comparison was the regulatory provision, not the 1995 PDO. The UMWA asks that I reconsider this ruling relying primarily on the language of 30 C.F.R. § 44.4(c) which provides a PDO has the same effect as a mandatory standard and the use of the term "promulgate" within the definition of "mandatory safety standard" in 30 U.S.C. § 802(l). However, as Emerald points out, the fact a PDO has the same effect as a mandatory standard does not make it the benchmark by which PDOs are measured. The section 802(l) definition clearly refers to the interim safety standards established by Titles II and III of the Act. Nor is a PDO is a standard "promulgated" pursuant to title I of the Act. Rather, the "standards" referred to by Section 101(c) of the Act are the industry-wide standards contained in 30 C.F.R. Part 75. Moreover, I find the history of the applicable provisions, as set forth in Emerald's Reply Brief, does not support changing my ruling.

Moreover, even if the benchmark was the 1995 PDO, a comparison establishes the 2000 PDO mandates even a higher level of protection (and thus safer) electrical safety requirements than does the former PDO. For example, the 2000 PDO permits the use of better shielded electrical cables. (TR 311). The 2000 PDO does not in and of itself restrict the width of longwall panels which has safety advantages as explained elsewhere herein. The 1995 PDO requirement to have two intake airways on the headgate requires Emerald to bring belt air to the face in order to provide the second intake travelway. This both reduces the ability to rock dust the belt entry and more easily ensure compliance with the rock dust standards. (TR 414). The 1995 PDO rock dust standard only requires Emerald comply with the regulatory provision, 30 C.F.R. § 75.402. Although it prescribes the method it sets no higher threshold level for the rock dust level itself. The 1995 PDO requirement for a mid-face methane monitor provides only an incremental or de minimus safety enhancement by adding yet one more monitor to an already redundant monitoring system. The extra travelway required in item 39 of the 1995 PDO provides de minimus protection because the miners are presently trained to use two MSHA-required escapeways. (TR 413). Emerald now uses mine vehicles for mine emergency egress and thus, the requirement for lifelines in the escapeway adds only de minimus protection. Significantly, the UMWA admitted the 2000 PDO was "in fact as effective as (the) '95 (PDO). . ." (TR 293).

Because of the requirements of 30 C.F.R. § 75.1002, the MSHA requires coal mine operators wishing to utilize "high" voltage to file a petition for modification of the existing standard. Since 1985, the MSHA has granted such petitions. Each such petition is evaluated on a mine-by-mine basis to account for individual mining conditions. Emerald's petition was virtually identical to the PDOs dealing with the same section at most other mines. Since MSHA began to grant such petitions, there have been no accidents or injuries resulting from such granted PDOs.

---

[11] In my Ruling and Order Denying Motion for Reconsideration and Granting Motion in Limine in Part ("Reconsideration Order"), dated April 10, 2001, I explained Part 75 of the regulations permits petitions for modification of only one standard at a time. While the regulations do not explicitly proscribe the number of safety standards which may be addressed in one PDO and permit inclusion of "terms and conditions", inclusion of terms or conditions dealing with matters already governed by existing mandatory safety standards has no effect beyond what is required by the latter and is mere surplusage. I mistakenly suggested Emerald may have compounded the error (of a PDO addressing more than one mandatory safety standard) by petitioning MSHA to modify 30 C.F.R. § 75.1002 rather than the 1995 PDO. ("Reconsideration Order, page 10). Emerald was in fact correct with the subject of its petition.

Emerald's previous three petitions for modification of this standard had been approved. The most recent petition, prior to the instant one, was docketed at No. M-95-37-C and granted September 20, 1995. (Attached to Stipulations as Joint Exhibit A). The present petition for modification was filed on 9/20/99 and approved, after investigation, by PDO, # M-1999-101-c, on 9/5/2000. (Investigation attached as Joint Exhibit B to Stipulations). The MSHA found Emerald's proposed alternative method will at all times guarantee no less than the measure of protection afforded by the standard. (The 2000 PDO is attached as Joint Exhibit C, Stipulations).

30 C.F.R. § 75.1002 states:

> Trolley wires and trolley feeder wires, high-voltage cables and transformers shall not be located inby the last open crosscut and shall be kept at least 150 feet from pillar workings.[12]

The section prohibits use of high-voltage cables inby the last open crosscut. The standard was one of the interim standards under the Federal Coal Mine Safety and Health Act of 1969, 30 U.S.C. § 801 (1976), the predecessor to the 1977 Act. At the time the provision and standard were promulgated, permissible high voltage longwall equipment did not exist. (TR 253). According to the legislative history of the 1969 Mine Act, the intent was to protect miners from hazards posed by an explosive mixture of gas being coursed over an ignition source, as well as roof falls which could cause damage or short circuits in cables. See Senate Report No. 91-411, 91st Congress, 1st Session at p. 77 (1969). The parties agreed the purpose of standard 75.1002 is to protect miners from the hazards of nonpermissible electrical equipment coming in contact with methane from pillared areas. The United States Court of Appeals for the District of Columbia has found it to be to "[P]rotect miners 'from face and explosive hazards as well as related electrical hazards.'" *International Union, UMWA v. FMSHA*, 931 F.2D 908 (D.C. Cir. 1991). The regulatory standard was, in part, intended to keep "nonpermissible" electrical equipment away from two areas of the mine where methane might be present, i.e., the pillar areas and inby the last open crosscut.[13]

MSHA agreed with Emerald that the section 75.1002 standard permits the use of medium voltage systems. (TR 322-323). Thus, if the high voltage system approved in the 2000 PDO is better than a medium voltage system permitted by section 75.1002, Emerald asserts it necessarily is better than the standard. (TR 322-323). MSHA's position is that "the evidence clearly demonstrates using high voltage equipment is certainly as safe and in fact much safer than what the mandatory standard permits at the No. 1 mine." (MSHA Brief at 5).

The granted petition for modification, i.e., the 2000 PDO, was conditioned upon compliance

---

[12] Trolley wires are bare wires or conductors which can actually generate sparks from the trolley pole of a mine vehicle traveling over the wire. (TR 119).

[13] Pillar workings are in areas of the mine where the pillars or blocks of coal left to support the roof are removed. See Dictionary of Mining Terms (1990). The last open crosscut is undefined, but is the last crosscut between entries before the face where the coal is severed. *See e.g., Peabody Coal Co.*, 11 FMSHRC 4, 8, 1989 WL 433341, *3 (Rev. Comm. 1989). On a longwall it is normally in the vicinity of the stageloader. (CX 30, 31).

with forty-one (41) enumerated specific terms and conditions, which need not be reiterated herein. (See 2000 PDO). These conditions are ones which MSHA generally includes in PDOs to modify section 75.1002. Over the past fifteen years, MSHA has evaluated and granted over 100 such petitions. These conditions were intended to mirror, to a large extent, the requirements that are included in the well-developed and detailed final rule concerning high voltage longwall mining equipment that MSHA intends to issue in the future.

The UMWA did not disagree with the majority of the conditions imposed by the MSHA. The UMWA never challenged the following terms and conditions of the 2000 PDO: items 1-8; 10-14; 17-23; 25-29; 31-37; and, 39-40. At various times the UMWA challenged as few as six of the forty-one enumerated specific terms and conditions. The 2000 PDO differed slightly from the 1995 PDO by eliminating certain provisions contained in the latter PDO which Emerald believed were both unrelated to high-voltage standards and addressed by either the approved roof control plan, the approved ventilation control plan, or by other specific MSHA regulations contained in 30 C.F.R. Part 75.

The UMWA complained that items 3 (neutral grounding resistors), 37 (panel lengths & widths), 39 (requiring two air intake escapeways), 40 (supplemental roof support of the tailgate), 41 (rock dust application), 42 (respirable dust sampling), and 43 (methane monitoring) from the 1995 PDO were not included in the 2000 PDO. The UMWA complained about the following items in the 2000 PDO: 9 (High-voltage cables & bus), 15 (reference to separate PDO on cable shielding), 16 (minor repairs, i.e., splicing cable, definition), 24 (longwall controller), 30 (caution labels), 38 (inspection and operation of "approved" equipment), and 41 (training plan). However, it was most concerned that the equipment needed to mine a larger longwall panel using high voltage power would generate more dust and methane gas. (TR p. 77). The UMWA admitted the 2000 PDO was "in fact as effective as (the) '95 (PDO). . ." (TR 293).

The expert evidence in this case was essentially undisputed. The 2000 PDO provides a measure of protection equal to that provided in the standard and it provides safety benefits which will achieve a net gain in safety. (TR 162, 166, 253, 387-8, 469-70; and MSHA-1). Since section 75.1002 became effective, there have been major advances in mining technology using high voltage longwall equipment. (TR 471). MSHA has worked on new high voltage longwall regulations since 1985. In the interim, there are currently 59 high voltage longwall petitions in operation in underground coal mines. (TR 465). Many of the terms and conditions of the 2000 PDO reflect MSHA's position in developing the proposed new regulations and new PDOs are drafted to ensure mine operators will be in compliance with them when and if they are enacted. (TR 477). The standard language in most of the new high voltage petitions granted by MSHA does not include any conditions addressing rock dust, escapeways, panel size, or the location of methane sensors. (TR 483).

The proposed rule dealing with high voltage equipment in longwall mining which MSHA intends to promulgate states:

> Over the past 15 years, MSHA has granted over 100 petitions for modification to use high-voltage electrical power with longwalls. In the Agency's evaluation of the use of high-voltage longwall mining systems, MSHA has concluded that they can be safely used, provided that certain conditions are met. Specifically, the Agency found that the

> previous safety concerns about explosion, fire and shock hazards initially associated with high-voltage use are sufficiently addressed by this newly-developed technology. In each of the petition cases the Agency granted, MSHA performed a specific on-site investigation to verify this finding. For example, we recognized that high-voltage electrical equipment and circuit design improvements in combination with sensitive electrical circuit protections reduce fire, explosion and shock hazards. Newly designed cable handling systems provide additional safety protections against electrical shock, fire, and explosion hazards when the cable is moved. Further, lighter power cables are available which reduce back strain and other injury risks to miners from the heavier cable lifting and hauling often associated with the moving or lifting of low-to-medium voltage cables. Moreover, there have been no electrical fatalities and no serious electrical injuries to miners because of the high-voltage equipment use under the granted modifications.

(MSHA-1, pp. 7-8). Essentially identical comments were echoed in the expert testimony herein. Based on the testimony of Emerald's expert witnesses and Mr. Phillips, I find that the safety concerns about explosion, fire and shock hazards associated with high-voltage use are sufficiently addressed by this newly-developed technology. High-voltage electrical equipment and circuit design improvements in combination with sensitive electrical circuit protections reduce fire, explosion and shock hazards. Newly designed cable handling systems provide additional safety protections against electrical shock, fire, and explosion hazards when the cable is moved. Lighter power cables are used which reduce back strain and other injury risks to miners from the heavier cable lifting and hauling often associated with the moving or lifting of low-to-medium voltage cables. Moreover, there have been no electrical fatalities and no serious electrical injuries to miners because of the high-voltage equipment use since 1970. According to Mr. Phillips, MSHA seeks uniformity in similar PDOs. He believes the 2000 PDO offers a net gain in protection, e.g. better short circuit protection and better shielded cables. He is 100 percent certain the 2000 PDO ground fault standards will protect miners, even those standing in water, around high voltage systems.

Even the well-intentioned mechanic, Mr. Billetz, admitted the high voltage system at Emerald has made the equipment larger and easier for him to repair. His understandable layman's concerns about increased levels of methane gas and the danger of miners working near high voltage cables were refuted by Mr. Phillips, Mr. Bryja and the employers' very credible and highly experienced electrical engineers and safety personnel. Mr. Bryja testified there "may" be some "modest" dust and methane increases with wider longwall panels, but studies show there "is" no linear correlation between methane release and the width of longwall panels. Nor is there a linear ratio in the liberation of dust. Moreover, Emerald, which has the newest longwall mining systems and the newest filtration systems has methods of dealing with any such increases. Emerald has made many positive changes in dust control which may not be visible or immediately apparent to the miners. Emerald also has several backup and alarm systems for the ventilation system in the event of a fan failure. Mr. Jones' testimony establishes the high voltage system will actually reduce the risk of electrical shock to miners over presently permissible systems. Moreover, each conductor, under the high voltage system, has more shielding around it. Items 17 and 18, 2000 PDO, require guarding high voltage cables where miners work or travel. Emerald uses "hard guarding" with pipes and "split guarding". Present systems do not have a requirement applicable to high voltage systems that requires neutral grounding resistors that will de-

energize the longwall power center if the grounding resistor is subjected to a sustained ground fault. Further, Mr. Phillips testified that even if a high voltage cable was accidentally damaged, with the grounding and fault requirements of the 2000 PDO, the maximum voltage a miner would be exposed to is 100 volts.

As Mr. Bryja testified, most of the accidents at Emerald involve construction, material handling, and equipment set up. The smaller components, e.g., motors and cables, associated with the high voltage system will be easier to handle and move. The components will generate less heat with fewer cables and better ground-fault protection. Ground fault currents will be greatly reduced with the high voltage system. The 2000 PDO has restrictions on handling high voltage cables which are not mentioned in the regulatory standard. Emerald's Bretby and monorail system will keep the cables suspended off the ground. As Mr. Bryja concluded, high voltage systems are the best mode for longwall mining and provides greater safety and efficiency. Mr. Jones, the staff electrical engineer, testified the biggest advantage of the high voltage system is that ground fault protection is limited to much lower levels than in medium voltage currently used with the advantage of reducing the chance of electrical shock.

Both high voltage and medium voltage systems are required to have instantaneous short circuit protection as required by item 8 of the 2000 PDO, but typically not the short circuit protection for the longwall power center to the longwall starter enclosure power. While item 4 of the 2000 PDO does not proscribe energizing a cable against a ground fault, Emerald uses protective relaying to sense ground faults by means of a look-ahead testing circuit which precludes energizing the cables when the resistance falls below a pre-set level in the relay, an added level of protection to prevent ground faults. The monitoring requirement in item 10, for each high voltage cable supplying a common bus in the longwall starter enclosure, is stricter than medium voltage systems. The primary visible disconnecting device to de-energize the primary of the high voltage transformers when the device is open, set out in item 11, is not required of medium voltage systems and is safer than the latter's typical couplers. Medium voltage systems typically are not required to have a secondary 4,160 volt disconnecting device to de-energize all high voltage cables extending to and from the longwall starter enclosure when the device is open, as in items 12 and 13. Medium voltage systems do not require the disconnect device mentioned in item 14. Condition 15 (2000 PDO) is not applicable by its own terms because a separate section 101(c) petition granted Emerald permits the use of a more durable, easier to maintain, and safer alternative SHD plus GC or SHD-CGC cable with center ground check which reduces inner machine arching. The splicing requirements of item 16 (2000 PDO) which mandates moisture excluding repair kits, are superior to requirements for medium voltage cable. Items 17 and 18 require guarding high voltage cables where miners work or travel. Emerald uses "hard guarding" with pipes and "split guarding" whereas only conduit would be used in medium voltage systems. A medium voltage system would not require prohibitions on handling cable such as item 20 or inspecting high voltage personal protective equipment. The barriers required in items 22, 23, 24 and 25 are not required in medium voltage systems. Item 26, interlock switches, would be the same for both high voltage systems and medium voltage systems but the latter system would not require the interlock switch for the longwall starter enclosure. Eight-foot wide, 150 pound cover plates or switches and side covers bolted over various high voltage systems are utilized which automatically turn off power if raised prior to de-energization. Medium voltage systems typically do not require the interlock with the primary disconnecting device for the power center set out in item 28. Usually, caution labels are only placed on

high voltage compartments, but item 30's requirement would be the same. Medium voltage systems do not require the use of a "main" to ground power factor capacitors, as required in item 29. Longwall high voltage equipment must be intrinsically safe or approved by MSHA; that makes it "permissible" equipment. High voltage cables must be de-energized, except for minimal "control" power, prior to trouble-shooting problems with them. The 2000 PDO requires Emerald to notify MSHA (and give them an opportunity to inspect) before putting a longwall in service or when the use of new electrical equipment is proposed.

Emerald has established that the high voltage system permitted under the 2000 PDO is imminently safer than the standard set forth in the regulatory standard and guarantees at all times a significantly higher level of protection to the miners.

It is evident that use of the high voltage system may enable Emerald to seek MSHA permission to mine wider longwall panels and it presently plans to seek increases up to 1250 feet. Any such increase would require MSHA approval. In any case, Emerald must have an MSHA-approved ventilation plan and roof control plan. Moreover, intake airways on headgates and the levels of respirable dust, float dust, rock dust and methane are governed by existing regulatory provisions. Emerald's most recent ventilation plan was approved by MSHA in April 2001.

Both Mr. Phillips and Emerald's expert witnesses established that even considering effects unrelated to the original standard, the 2000 PDO will achieve a net gain in overall mine safety. There will be fewer accidents from construction, material handling, and equipment set up. Fewer longwall panel equipment moves and dangerous in-panel moves will be reduced thus reducing the accident potential. Mr. Bryja's testimony establishes that Emerald has an excellent and MSHA-approved ventilation plan which is more than adequate to guarantee the miners' safety. It is not necessary to require two air intake airways on the headgate because the existing mandatory standard requires Emerald to have a primary escapeway ventilated with intake air as well as an alternate escapeway. Should methane levels increase above the one percent limit, Emerald would adjust the ventilation according to the mandatory safety standard. Emerald's present system for methane monitoring is safe and implementation of the 2000 PDO will not reduce the present safety level. MSHA's requirement for escapeways calls for the exclusion of potential fire sources from primary escapeways. Emerald's mechanized riding escape system provides more protection than the former walking escape system. Travelways are already governed by MSHA size standards. The training given miners in high voltage longwall systems is adequate. Nor is it necessary to define "minor" repairs, as major repairs are defined.

Even if Emerald's longwall panel width increases to 1250 feet as planned, under the 2000 PDO, there would be protection to the miners equivalent to the standard or better. MSHA must approve any changes to Emerald's roof control and ventilation plans before panel width may be increased. Roof bolting and supplemental supports ensure the tailgate remains open for escape and ventilation. Wider panels do not result in greater pressure on the shields or increased abutment pressures on the longwall. Wider panels do not result in proportionate increases in methane liberation or dust. Nor does increased panel width result in a proportionate increase in respirable dust. Ventilation of longwall panels of various sizes is not a problem and is well-handled by Emerald. Moreover, Emerald's MSHA ventilation plan (April 2001) has redundant safety features and inspection

requirements. Emerald has the means and desire to deal with any increased methane levels in accordance with the mandatory safety standards. Emerald has vastly improved it dust suppression system. Emerald effectively deals with float dust under the current mandatory standards. It has an effective evacuation system in the event of emergencies. Finally, Emerald has a very good safety record.

I conclude that Emerald has established that taking into account both the advantages and disadvantages of the alternative method set forth in the 2000 PDO, including effects unrelated to the goals of the original standard, the approved modification will achieve a net gain or at least equivalence in overall mine safety.

VI. CONCLUSIONS

Emerald has established that the conditions of the modification of 30 C.F.R. § 75.1002, dealing with "trolley wires and trolley feeder wires", set forth in the proposed decision & order ("PDO") of the MSHA**,** dated 9/5/00, will at all times guarantee no less than the same measure of protection afforded the miners at such mine by mandatory safety standard of 30 C.F.R. § 75.1002 and that taking into account both the advantages and disadvantages of the alternative method set forth in the 2000 PDO, including effects unrelated to the goals of the original standard, the approved modification will achieve a net gain or at least equivalence in overall mine safety. Implementation of the 2000 PDO will protect miners, much better than the existing mandatory standard, from the hazards posed by an explosive mixture of gas being coursed over potential ignition sources, i.e., electrical equipment, as well as roof falls which could cause damage or short circuits in cables.

ORDER

WHEREFORE, IT IS ORDERED THAT:

1. The first sentence of paragraph 2, item 9, 2000 PDO, incorrectly states "ground fault" relay or "individual" relay rather than "over-current" relay and shall be corrected to state "over-current" relay.

2. The language of Item 38, 2000 PDO, is interpreted as requiring MSHA inspection of high voltage longwall mining equipment for compliance before it is initially placed in service. With respect to the use of the identical, MSHA-inspected, high voltage longwall mining equipment in subsequent longwall panels, Emerald must notify MSHA of its intent to utilize said equipment before it is so used, describe any equipment modifications, and give MSHA a reasonable time within which to inspect said equipment if MSHA determines inspection is necessary. If MSHA either determines a further inspection is unnecessary or does not inspect said equipment within 30 days of Emerald's notice, then Emerald may utilize it.

NON-BINDING RECOMMENDATIONS[14]

IT IS RECOMMENDED THAT:

1. Emerald maintain a passable (four foot wide) travelway on the tailgate side of the longwall ventilated with intake air to the extent practicable.

2. Emerald maintain two separate intake entries on the headgate side, as set forth in the 1995 PDO.

3. Emerald continue use of the lifeline in spite of the present motorized egress system to provide a backup in the event of a failure in the present evacuation system.

4. Emerald continue to rock dust in the tailgate.

5. Emerald maintain a mid-face methane monitor to assuage the miners' concerns.

6. Emerald require checking and calibrating the tailgate methane monitor weekly as Mr. Billetz recommended rather than once every 31 days, as required by MSHA.

7. MSHA reduce the period for checking and calibrating the tailgate methane monitor from once every 31 days to weekly.

A
RICHARD A. MORGAN
Administrative Law Judge

RAM:dmr

[14] Not to be included in a PDO.